514 Rec'd PCT/PTO 17 AUG 1999

FORM PTO-1390
REV. 5-93

US DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEYS DOCKET NUMBER
P99,1527

U.S.APPLICATION NO. (if known, see 37 CFR 1.5)
09/367580

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP98/00877	**16 February 1998**	17 February 1997

TITLE OF INVENTION
A NODE WHICH SUPPORTS ENHANCED LINKS FOR TRANSFERRING LONGER MESSAGES THAN ACCORDING TO CURRENT MTP LEVELS 2

APPLICANT(S) FOR DO/EO/US
Klaus Gradischnig

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay.
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of International Application as filed (35 U.S.C. 371(c)(2))
   a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C §371(c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). **EXECUTED**
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98; (PTO 1449, Prior Art, Search Report)
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 C.F R. 3.28 and 3.31 is included. (See attached envelope)
13. ☒ A FIRST preliminary amendment.
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
    a. ☒ Submission of Drawings - Figs. 1-4 on four sheets
    b. ☒ EXPRESS MAIL #EL378698747US dated 8-17-99

514 Rec'd PCT/PTO 17 AUG 1999

U.S. APPLICATION NO (if known, see 37 C.F.R. 1.5)	INTERNATIONAL APPLICATION NO	ATTORNEY'S DOCKET NUMBER
09/367580	PCT/EP98/00877	P99,1527

17. ☒ The following fees are submitted:

	CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE (37 C.F.R. 1.492(a)(1)-(5):		
Search Report has been prepared by the EPO or JPO $840.00		
International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) . . $720.00		
No international preliminary examination fee paid to USPTO (37 C.F.R. 1.482) but international search fee paid to USPTO (37 C.F.R. 1.445(a)(2) $790.00		
Neither international preliminary examination fee (37 C.F.R. 1.482) nor international search fee (37 C.F.R. 1.445(a)(2) paid to USPTO $1070.00		
International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) . . . . . $ 98.00		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 840.00	
Surcharge of $130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 C.F.R. 1.492(e)).	$	

Claims	Number Filed		Number Extra	Rate		
Total Claims	6	- 20 =	0	X $ 18.00	$	
Independent Claims	2	- 3 =	0	X $ 78.00	$	
Multiple Dependent Claims				$260.00 +	$	
TOTAL OF ABOVE CALCULATIONS =					$	
Reduction by ½ for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 C.F.R. 1.9, 1.27, 1.28)					$	
SUBTOTAL =					$ 840.00	
Processing fee of $130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +					$	
TOTAL NATIONAL FEE =					$ 840.00	
Fee for recording the enclosed assignment (37 C.F.R 1.21(h). The assignment must be accompanied by an appropriate cover sheet (37 C.F.R. 3.28, 3.31). $40.00 per property +						
TOTAL FEES ENCLOSED =					$ 840.00	
					Amount to be refunded	$
					charged	$

a. ☒ A check in the amount of $ 840.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2290. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 C.F.R. 1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Hill & Simpson
A Professional Corporation
85th Floor Sears Tower
Chicago, Illinois 60606

SIGNATURE

William E. Vaughan
NAME

39,056
Registration Number

BOX PCT

IN THE UNITED STATES ELECTED OFFICE

OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER THE PATENT COOPERATION TREATY-CHAPTER II

PRELIMINARY AMENDMENT

APPLICANT: Klaus Gradischnig DOCKET NO: P99,1527

SERIAL NO: GROUP ART UNIT:

EXAMINER:

INTERNATIONAL APPLICATION NO: PCT/EP98/00877

INTERNATIONAL FILING DATE: 16 February 1998

INVENTION: **A NODE WHICH SUPPORTS ENHANCED LINKS FOR TRANSFERRING LONGER MESSAGES THAN ACCORDING TO CURRENT MTP LEVEL 2**

Assistant Commissioner for Patents,
Washington, D.C. 20231

Sir:

Please amend the above-identified International Application before entry into the National stage before the U.S. Patent and Trademark Office under 35 U.S.C. §371 as follows:

In The Specification:

On page 1, cancel lines 1-6 and substitute therefor:

--S P E C I F I C A T I O N

TITLE

A NODE WHICH SUPPORTS ENHANCED LINKS FOR TRANSFERRING LONGER MESSAGES THAN ACCORDING TO CURRENT MTP LEVEL 2

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a node, which supports enhanced link sets, having the ability to transfer longer messages than according to

current MTP level 2, wherein the node includes, in addition to a standard first point code, a second point code which enables the full use of the longer message length.

Description of the Prior Art--

On page 1, line 8, cancel "nr." and substitute therefor --no.--.

On page 1, line 9, cancel "one" and substitute therefor --stack--.

On page 1, line 11, insert a --,-- after "product".

On page 1, lines 11-12, cancel "(message transfer part)".

On page 1, line 17, cancel "addressing" and substitute therefor --which address--.

On page 1, line 17, cancel "three".

On page 1, line 18, cancel "aspects" and substitute therefor --problematic elements--.

On page 1, line 19, insert a --,-- after "contains".

On page 1, line 19, insert a --,-- after "option".

On page 1, line 22, insert a --,-- after "Otherwise".

On page 1, line 25, cancel "Starting" and substitute therefor --Thus, starting--.

On page 1, line 25, insert a --,-- after "SSCOP".

On page 1, line 26, cancel "thus".

On page 1, line 28, cancel "Finally" and substitute therefor --In addition,--.

On page 1, line 30, cancel the "," after "links".

On page 2, line 2, cancel "could".

On page 2, line 2, insert --could-- after "also".

On page 2, line 4, insert a --(-- before "which".

On page 2, line 5, insert a --)-- after "problems".

On page 2, line 9, insert a --,-- after "course".

On page 2, line 11, insert a --,-- after "Indeed".

On page 2, line 14, cancel "indeed".

On page 2, include the paragraph which begins on line 19 in the paragraph which ends on line 18.

On page 2, line 19, insert a --,-- after "Therefore".

On page 2, line 19, cancel "we have".

On page 2, line 19, insert --exists-- after "situation".

On page 2, line 20, insert --when-- before "possible".

On page 2, cancel line 24.

On page 2, include the paragraph which begins on line 28 in the paragraph which ends on line 27.

On page 2, include the paragraph which begins on line 30 in the paragraph which ends on line 29.

On substitute page 3, line 3, cancel "like" and substitute therefor --such as--.

On substitute page 3, line 7, cancel the "," and substitute therefor a --;--.

On substitute page 3, line 8, cancel "e.g.".

On substitute page 3, line 8, insert --, e.g.,-- after "be".

On substitute page 3, line 12, cancel the "," and substitute therefor a — - --.

On substitute page 3, line 14, insert a --,-- after "GT".

On substitute page 3, include the paragraph which begins on line 17 in the paragraph which ends on line 16.

On substitute page 3, line 19, cancel "In addition" and substitute therefor --Further--.

On substitute page 3, line 27, insert a --,-- after "nodes".

On substitute page 3a, cancel line 4.

On substitute page 3a, include the paragraph which begins on line 11 in the paragraph which ends on line 9.

On substitute page 3a, line 11, cancel "arising" and substitute therefor --which arises--.

On substitute page 3a, line 11, cancel "use of".

On substitute page 3a, line 11, insert --are to be used-- after "messages".

On substitute page 3a, line 12, cancel "also".

On substitute page 3a, line 12, cancel "supporting" and substitute therefor --which support--.

On substitute page 3a, line 13, cancel "is to be made".

On substitute page 3a, line 13, insert --, however,-- after "not".

On page 4, line 2, cancel "otherwise" and substitute therefor --other--

.

On page 4, include the paragraph which begins on line 6 in the paragraph which ends on line 5.

On page 4, line 6, insert a --,-- after "SCCP".

On page 4, include the paragraph which begins on line 11 in the paragraph which ends on line 10.

On page 4, cancel line 14.

On page 4, line 16, insert a --,-- after "solve".

On page 4, line 16, insert a --,-- after "prevent".

On page 4, line 16, insert --above-described-- after "the".

On page 4, line 17, cancel "This works as follows:".

On page 4, before line 18, insert the following:

--**SUMMARY OF THE INVENTION**

Accordingly, in an embodiment of the present invention, a node is provided which supports enhanced links and which has the ability to transfer longer messages than according to current MTP level 2, wherein the node includes first and second signaling point codes such that the second point code is used to identify functions and MTP users which can make full use of

the longer message length and both the first and second point codes are part of the same MTP network.

In an embodiment, the node further includes MTP routing tables which support the enhanced links, wherein the routing tables are structured so that routing between nodes with the second point code use only the enhanced links.

In an embodiment, the node further includes SCCP translation functions which support the enhanced links, the SCCP translation functions being engineered such that primary translation is to logical destinations reachable via the enhanced links and backup translation is to logical destinations reachable via links based on MTP level 2 if translation results in a physical destination located in a node supporting the enhanced links.

In a further embodiment of the present invention, the first and second point codes are part of different MTP networks.

Additional features and advantages of the present invention are described in, and will be apparent from, the Detailed Description of the Preferred Embodiments and the Drawing.

DESCRIPTION OF THE DRAWINGS

Figure 1 shows the various protocol stacks for SS7 up to the MTP level;

Figure 2 shows an example of a network in accordance with the present invention which includes first and second point codes;

Figure 3 shows a logical network for short messages in accordance with the present invention; and

Figure 4 shows a logical network supporting long messages in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--

On page 4, line 18, cancel "Each" and substitute therefor --In accordance with the present invention, each--.

On page 4, line 22, cancel the "," after "functions" and substitute therefor a --;--.

On page 4, line 22, insert a --,-- after "i.e.".

On page 4, line 24, cancel "figure" and substitute therefor --Figure--.

On page 4, line 27, cancel "tables" and substitute therefor --Tables--.

On page 4, line 27, cancel "to" and substitute therefor --through--.

On page 4, line 27, insert a --,-- after "3".

On page 4, line 27, cancel "an".

On page 4, line 29, cancel "table" and substitute therefor --Table--.

On page 4, line 29, insert a --,-- after "5".

On page 4, line 29, cancel "an".

On page 4, line 31, insert a --,-- after "i.e.".

On page 5, line 1, insert a --,-- after "Thus".

On page 5, line 2, insert a --,-- after the ")".

On page 5, line 3, insert a --,-- after "linksets".

On page 5, line 4, cancel "figure" and substitute therefor --Figure--.

On page 5, include the paragraph which begins on line 5 in the paragraph which ends on line 4.

On page 5, include the paragraph which begins on line 12 in the paragraph which ends on line 11.

On page 5, line 18, cancel "table" and substitute therefor --Table--.

On page 5, line 19, insert a --,-- after "connected".

On page 5, line 21, insert a --,-- after "fail".

On page 5, line 25, cancel "can".

On page 5, line 25, insert --can-- after "also".

On page 5, include the paragraph which begins on line 27 in the paragraph which ends on line 26.

On page 5, line 27, insert a --,-- after "similarly".

On page 5, line 27, cancel "is".

On page 5, line 27, insert --is-- after "also".

On page 5, after line 32, insert the following paragraph:

--Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.--

On page 10 (last page), cancel lines 1-12 and substitute the following therefor:

--**ABSTRACT OF THE DISCLOSURE**

A node, which supports enhanced link sets, which includes two signaling point codes such that one of the signaling point codes is used to identify functions and MTP users which can make full use of a longer and unsegmented message length (i.e., in excess of 255 octets) which heretofore had to be segmented before being delivered to link sets supporting only messages according to Q.703.--

In the Claims:

On page 9, cancel line 1 and substitute therefor:

--**I Claim As My Invention**--.

Please cancel claims 1-6, without prejudice, and substitute the following claims therefor:

7. A node, which supports enhanced links, having the ability to transfer longer messages than according to current MTP level 2, the node comprising first and second signaling point codes, wherein the second point code is used to identify functions and MTP users which can make full use of the longer message length, and both the first and second point codes are part of a same MTP network.

8. A node as claimed in claim 7, further comprising MTP routing tables supporting the enhanced links, wherein the routing tables are

structured such that routing between nodes with the second point code uses only the enhanced links.

9. A node as claimed in claim 7, further comprising SCCP translation functions supporting the enhanced links, the SCCP translation functions engineered such that primary translation is to be logical destinations reachable via the enhanced links and backup translation is to logical destinations reachable via links based on MTP level 2 if translation results in a physical destination located in a node supporting the enhanced links.

10. A node, which supports enhanced links, having the ability to transfer longer messages than according to current MTP level 2, the node comprising first and second signaling point codes, wherein the second point code is used to identify functions and MTP users which can make full use of the longer message length, and both the first and second point codes being part of different MTP networks.

11. A node as claimed in claim 10, further comprising MTP routing tables supporting the enhanced links, wherein the routing tables are structured such that routing between nodes with the second point code uses only the enhanced links.

12. A node as claimed in claim 10, further comprising SCCP translation functions supporting the enhanced links, the SCCP translation functions engineered such that primary translation is to be logical destinations reachable via the enhanced links and backup translation is to logical destinations reachable via links based on MTP level 2 if translation

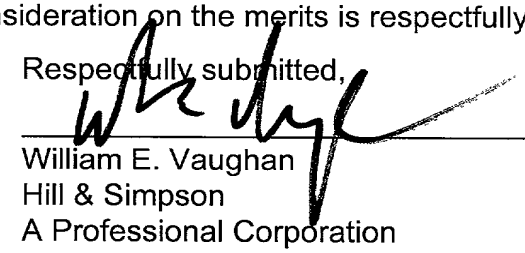
results in a physical destination located in a node supporting the enhanced links.

REMARKS

The present amendment makes editorial changes and corrects typographical errors in the specification in order to conform the specification to the requirements of the United States Patent practice. No new matter is added thereby. Original claims 1-6 have been canceled in favor of new claims 7-12. However, claims 7-12 have been presented solely because the revisions by bracketing and underlining which would have been necessary in claims 1-6 in order to conform those claims to the requirements of United States Patent practice would have been too extensive, and thus would have been too burdensome. The cancellation of claims 1-6 does not constitute an intent on the part of the Applicant to surrender any of the subject matter of claims 1-6.

Early consideration on the merits is respectfully requested.

Respectfully submitted,



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BOX PCT

IN THE UNITED STATES ELECTED OFFICE
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER THE PATENT COOPERATION TREATY-CHAPTER II

APPLICANT: Klaus Gradischnig DOCKET NO: P99,1527
SERIAL NO: GROUP ART UNIT:
EXAMINER:

INTERNATIONAL APPLICATION NO: PCT/EP98/00877

INTERNATIONAL FILING DATE: 16 February 1998

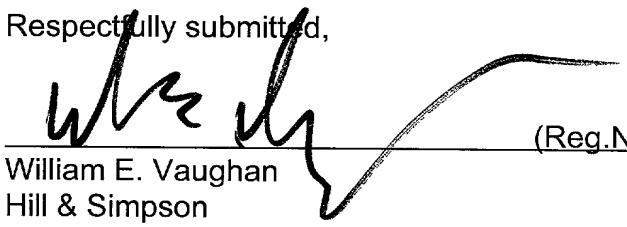
INVENTION: **A NODE WHICH SUPPORTS ENHANCED LINKS FOR TRANSFERRING LONGER MESSAGES THAN ACCORDING TO CURRENT MTP LEVEL 2**

Assistant Commissioner for Patents,
Washington, D.C. 20231

SUBMISSION OF DRAWINGS

Applicant herewith submits four sheets (Figs. 1-4) of drawings for the above-referenced PCT application.

Respectfully submitted,



(Reg.No. 39,056)

William E. Vaughan
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Attorneys for Applicant

Description

Node supporting links having the ability to transfer longer messages than according to current MTP level 2,

Background

Figure 1 shows the various protocol stacks for SS7 (Signalling system nr. 7) up to the MTP (message transfer part) level. Five stacks are currently defined. The first one is the well known stack for operation on 56/64kbit/s links.

Due to an increased bandwidth delay product the MTP (message transfer part) level 2 (Q.703) is not ideally suited for speeds significantly above 64kbit/s. The elements which are problematic are window size, retransmission strategy, and the error rate monitor.

Three different protocol stacks have been defined for use on T1/E1 links (1.5/2 MBit/s) addressing some or all three of these aspects.

The latest edition of Q.703 contains as a national option a modification to the level 2 protocol which introduces 12 bit sequence numbers and a different error rate monitor (second column). Otherwise the procedures are not changed.

Recommendation Q.2119 defines frame-relay framing for SSCOP (Service specific connection oriented protocol, Q.2110) to be used on a raw E1/T1 link (third stack). Starting at SSCOP the complete broadband protocol stack can thus be used on high speed signalling links.

Finally Bellcore defines the complete ATM signalling protocol stack starting at the ATM layer for use on T1 signalling links, with certain restrictions in the ATM layer, like not allowing multiple VCs (virtual channels) on a T1 link (column 4).

Lastly, the full ATM signalling protocol stack (column 5) could also be used in narrowband networks.

Besides the potentially vastly different link speeds which, however, pose no new interworking problems, the main difference between MTP level 2 based and SSCOP based signalling lies in the different maximum MSU length supported.

Of course there is no need to actually make use of the longer MSU length supported by the ATM links in an enhanced narrowband signalling network. Indeed the existing narrowband SS7 user parts would not even make use of the longer MSU length. We note, however, that the users of the SCCP can indeed generate messages in excess of 255 octets (the maximum data size supportable in single messages of the pre-96/97 SCCP). Such messages will be segmented before being delivered to the MTP. If such traffic would go via ATM links, avoiding the segmentation would benefit performance significantly.

Therefore we have the situation that use of the larger MSU sizes - where needed and possible - would be an additional welcome benefit of using the enhanced linksets.

SS7 Routing

Each node in an MTP network is identified by one signalling point code.

An MTP network is identified by the so-called *network indicator* in an MTP message.

Routing in the MTP is based on the so-called *destination* (signalling) *point code* (DPC) which identifies the destination of a *message signalling unit* (MSU) in an MTP network. In addition, the *signalling link selection field* (SLS) can be used do select between available routes of equal

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priority (*combined linksets*) and to select a specific link within a linkset (a collection of links directly connecting two signalling points). No other information (like origination, MTP user, or MSU length) is generally evaluated for routing in the MTP.

The SCCP augments the MTP routing by providing additional functions to route on a so-called *global title* (GT), which can e.g. be a subscriber number of an 800-number. An SCCP routing on GT performs a process called *global title translation* (GTT) which derives the DPC of the final destination or the DPC of the next node (intermediate translator node) where the GT is further analyzed, eventually leading to the DPC of the final destination.

In addition to the GT the SCCP uses a so-called *subsystem number* (SSN) to identify the addressed SCCP user in the final destination.

This process also allows an SCCP message to cross MTP network boundaries.

In addition, the outcome of a GTT can depend on the availability status of the (next) destination. If the so-called *primary* destination, which would normally be the result of a GTT, or the addressed SSN is not available or reachable, an alternative destination can be the result of the GTT. This allows the SCCP to route messages to *backup* destinations (or backup intermediate translator nodes). Loadsharing between destinations is, in principle, also a possibility. Between two SCCP nodes the messages are routed by the MTP using the DPC provided by the SCCP.

State of the art

The Document „Trends of signalling protocol evolution in ATM networks, ISS'95, vol.2, 23-28 April 1995, Berlin, pages 310-314, Gradischnig K.D." gives an overview of signalling protocol evolution in ATM networks.

The interworking problem arising if use of longer messages in networks containing also linksets supporting only short messages is to be made has not been addressed in any detail.

Bellcore simply specifies that long messages destined for an MTP level 2 based link are to be discarded and that otherwise routing should be administrated accordingly.

A similar solution is proposed for the MTP based narrowband-broadband interworking in Q.2210.

For the SCCP the possibility is defined to convert long LUDT(S) messages into segmented short XUDT(S) messages.

All these solutions, however, require appropriate planning of the routes supporting the longer messages and/or will not make optimal use of the capabilities available.

An MTP level 3 protocol based approach to solve such problem is described in Q.701. This solution, however, is incomplete.

Addressing based solution

This invention proposes to use the addressing mechanisms provided in MTP and SCCP to solve or rather prevent the interworking problem. This works as follows:

Each node, which supports linksets having the ability to transfer longer messages than according to Q.703 (for example SSCOP-linksets), is assigned a second point code (in addition to its *narrowband* point code), which will be called *broadband* pointcode, identifying its enhanced functions, i.e. those which can generate long messages. An example of such a network is given in figure 2. Routing tables in the MTP are engineered so that these *broadband* signalling points are only connected via linksets supporting the longer message length (see tables 1 to 3 for an example). Non-enhanced nodes would have no knowledge about the broadband point codes in the MTP network (see table 5 for an example). For the interconnection of the narrowband point codes and the non-enhanced nodes (i.e. the nodes having only *narrowband* point codes) all linksets, however, would be available.

Thus the nodes supporting the enhanced links (nodes identified also by the broadband signalling point codes) together with the enhanced linksets would form an overlay network which can transport longer messages (see figure 3).

Even nodes having only the enhanced linksets would be identified by a narrowband and a broadband point code.

It is, however, still possible for the SCCP to reach a node (having a narrowband and a broadband point code) to which no enhanced route is currently available by appropriately engineering the SCCP GT translation data if this should be desired by the operator of the network.

GT translation in the SCCP of a node having a narrowband and a broadband point code is engineered so that physical destinations (intermediate translators or final destinations) having a narrowband and a broadband point code have the broadband point code as the primary translation result and the narrowband point code as the backup translation result (see table 4).

As long as two signalling points are connected an enhanced route will be used. If all enhanced routes between two nodes having a narrowband and a broadband point code fail communication between the nodes will be via the linksets supporting only short messages, using the narrowband point codes as addresses.

In addition, this solution can also be used for any new MTP users or appropriately modified existing MTP users like ISUP.

Similarly this solution is also suitable for interworking between narrowband and broadband signalling networks.

Note that an alternative solution would be to use a different network indicator for the enhanced part of the signalling network which would have the advantage that there would be no restrictions in the available address space for point codes.

Table 1: MTP routing table in node a/A without link failure

destination	next node	
b	b	c
B	B	
c	c	b
d	b	c
D	B	

Table 2: MTP routing table in node a/A with link A to B failed
short messages can still reach all nodes via c

destination	next node	
b		c
B		
c	c	
d		c
D		

Table 3: MTP routing table in node a/A with link C-D failed
long messages to D not possible anymore

destination	next node	
b	b	c
B	B	
c	c	b
d	b	c
D		

Table 4: SCCP global tile translation in node a/A for GT resulting in addressing the SCCP (or one of its users) in node d/D

primary result (MTP address)	backup result (MTP address)
D (long message allowed)	d (segmentation required)

Table 5: MTP routing table in node c without link failure

destination	next node	
a	a	b
b	b	
d	d	b

Article 34 Amdt

New Claims

1. Node supporting links having the ability to transfer longer messages than according to current MTP level 2, so-called enhanced links, characterised in that
said node is identified by two signalling point codes (PC1, PC2) one point code (PC2) being used to identify/address functions/MTP users which can make full use of the longer message length, but both point codes (PC1, PC2) being part of the same MTP network.

2. Node according to Claim 1, characterized by
MTP routing tables supporting said enhanced links structured so that routing between nodes with said one point code (PC2) uses only enhanced links.

3. Node according to Claim 1 or 2, characterized by
SCCP translation functions supporting said enhanced links engineered that primary translation is to logical destinations reachable via said enhanced links and backup translation is to logical destinations reachable (also) via links based on MTP level 2 if translation results in a physical destination located in a node supporting said enhanced links.

4. Node supporting links having the ability to transfer longer messages than according to current MTP level 2, so-called enhanced links, characterised in that
said node is identified by two signalling point codes (PC1, PC2) one point code (PC2) being used to identify/address functions/MTP users which can make full use of the longer message length, with the two point codes (PC1, PC2) being part of different MTP networks, i.e with a different network indicator, but all point codes being used to identify/address functions/MTP users which can make full use of the longer message length located in the same MTP network.

Article 34 Amdt

5. Node according to Claim 4, characterized by MTP routing tables supporting said enhanced links structured so that routing between nodes with said one point code (PC2) uses only enhanced links.

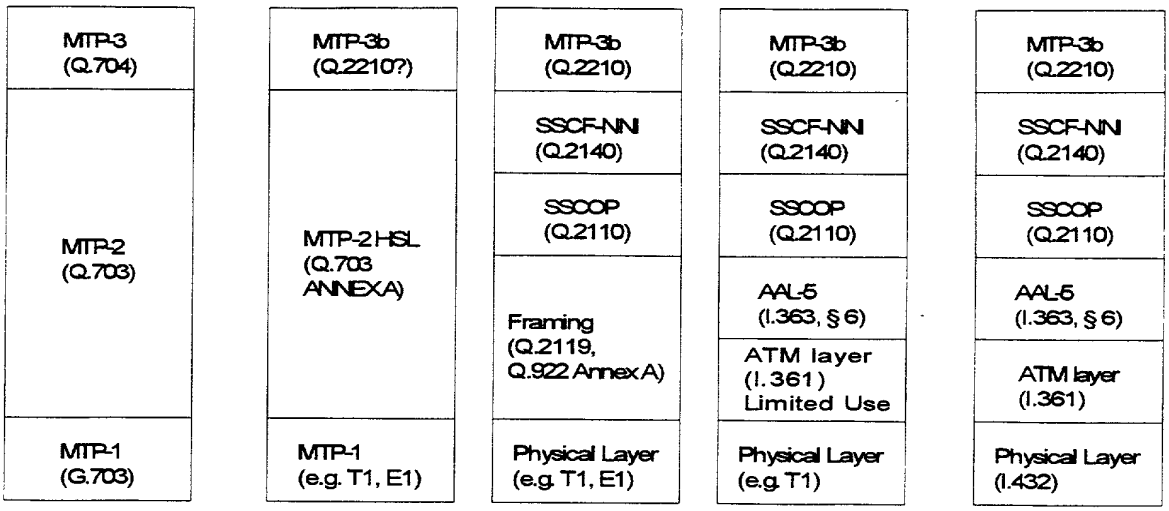
6. Node according to Claim 4 or 5, characterized by SCCP translation functions supporting said enhanced links engineered that primary translation is to logical destinations reachable via said enhanced links and backup translation is to logical destinations reachable (also) via links based on MTP level 2 if translation results in a physical destination located in a node supporting said enhanced links.

The abstract

Node

The users of the SCCP can generate messages in excess of 255 octets. Such messages are segmented before being delivered to linksets supporting only messages according to Q.703 . If such traffic would go via enhanced linksets supporting longer messages than according to Q.703, avoiding the segmentation would benefit performance significantly. The invention avoides the segmentation by assigning a second point code to the enhanced linksets.

Protocol Stacks proposed for High Speed Signalling Links

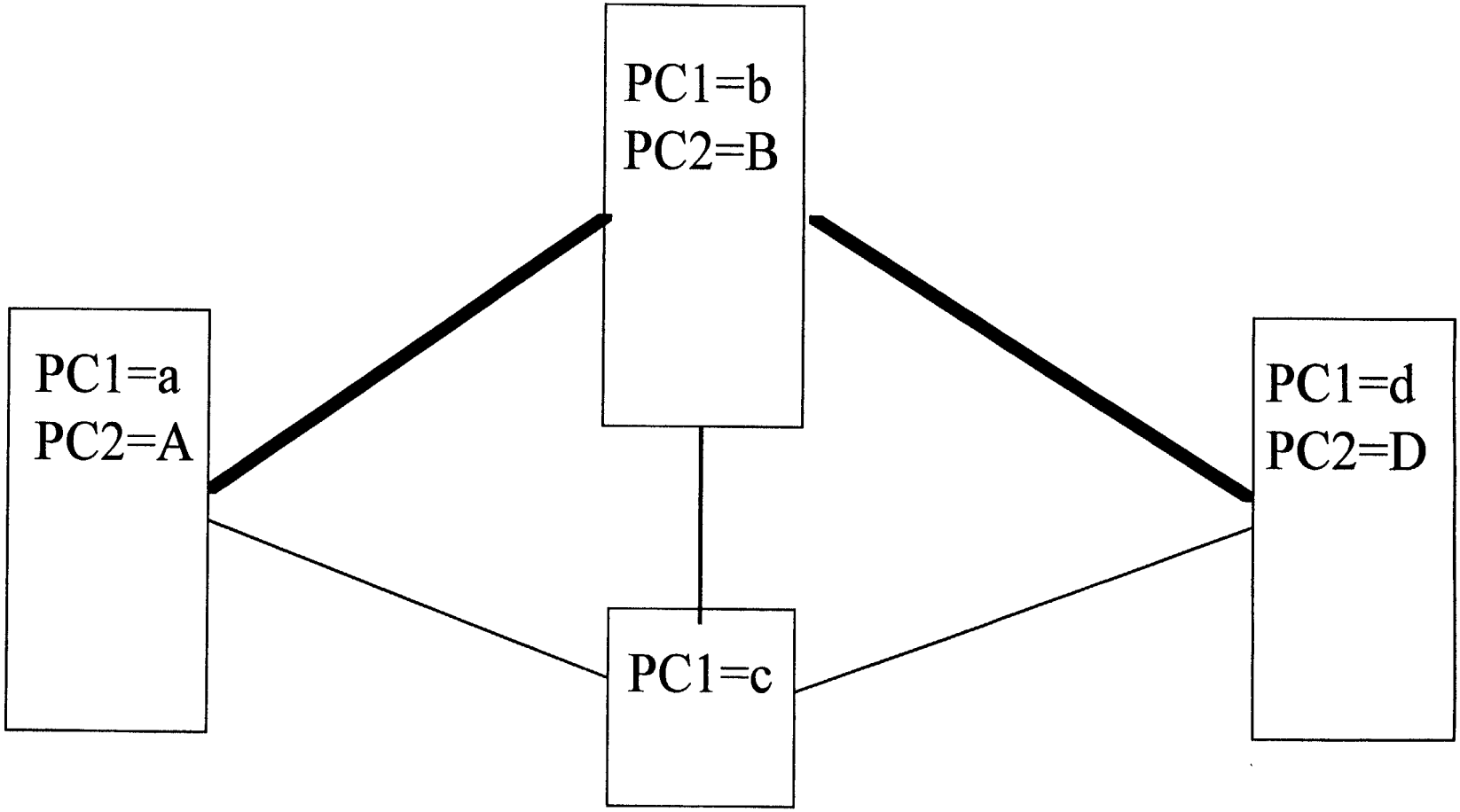


SSCF-NNI: Service Specific Coordination Function at the Network Node Interface

SSCOP: Service Specific Conncetion Oriented Protocol

FIG 1

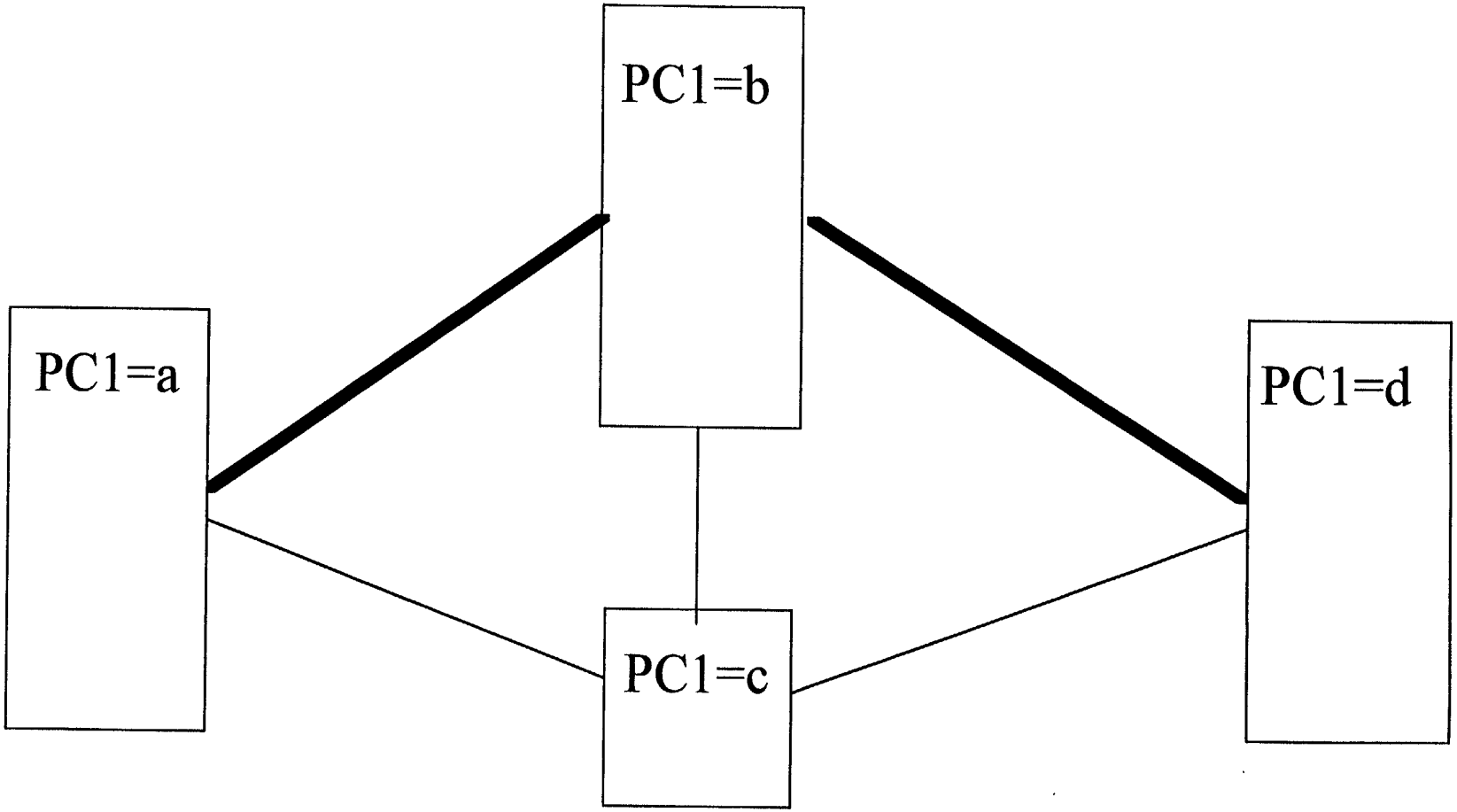
Figure 2 - physical network configuration



PC1 point code 1 (*narrowband point code*)
PC2 point code 2 (*broadband point code*)

▬ link/linkset based on SSCOP (Q.2110)
— link/linkset based on MTP level 2 (Q.703)

Figure 3 - logical network for short messages

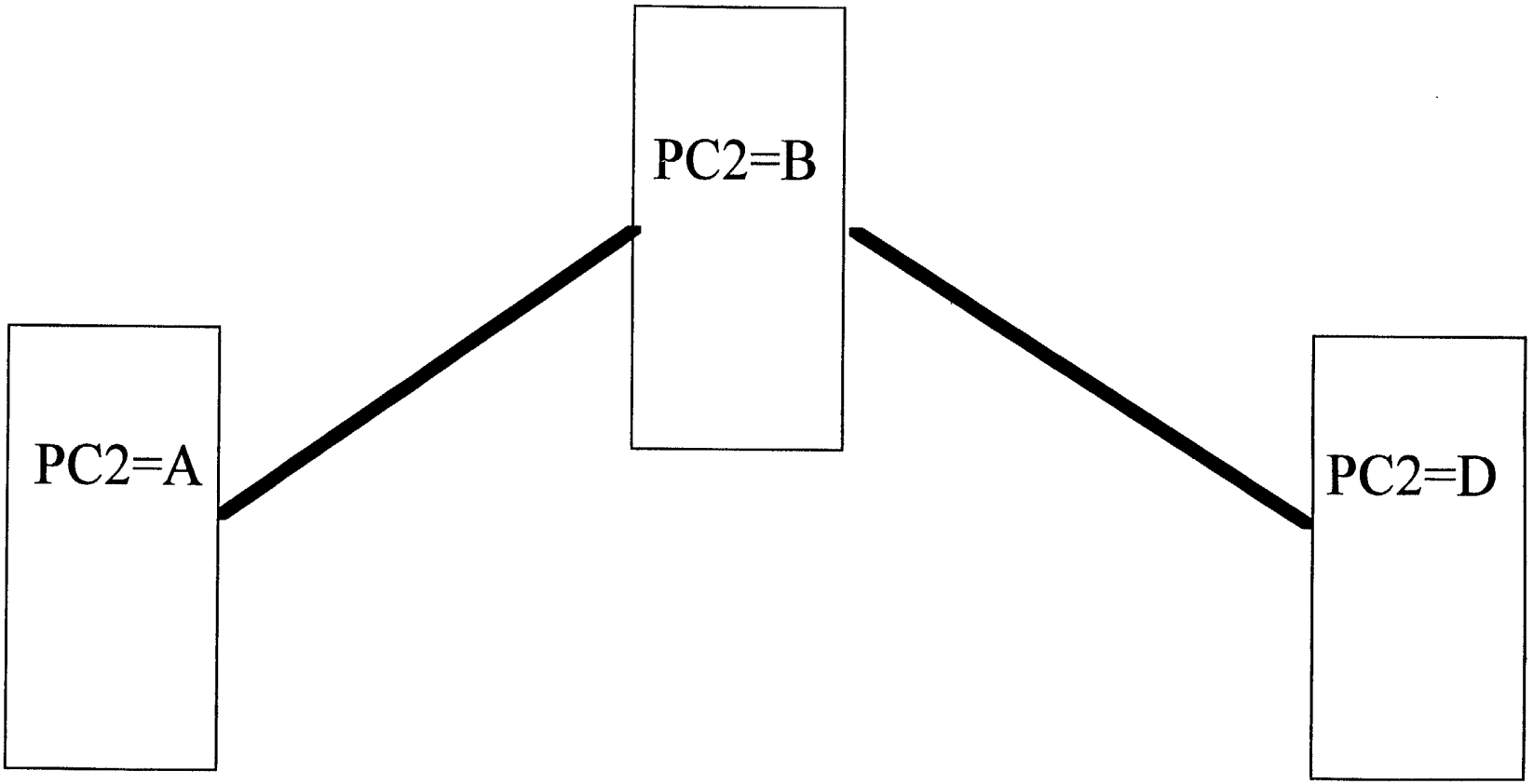


PC1 point code 1 (*narrowband point code*)

link/linkset based on SSCOP (Q.2110)

link/linkset based on MTP level 2 (Q.703)

Figure 4 - logical network supporting long messages



PC2 point code 2 (*broadband point code*)

link/linkset based on SSCOP (Q.2110)

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erklare ich hiermit an Eides Statt:

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dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprunglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, fur den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

Node supporting links having the ability to transfer longer messages than according to current MTP level 2

deren Beschreibung

(zutreffendes ankreuzen)

☒ hier beigefügt ist.

☐ am _____ als PCT internationale Anmeldung PCT Anmeldungsnummer _____ eingereicht wurde und am _____ abgeändert wurde (falls tatsächlich abgeändert).

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My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

_____

_____

_____

the specification of which

(check one)

☐ is attached hereto

☐ was filed on _____ as PCT international application PCT Application No _____ and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1 56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed·

German Language Declaration

Prior foreign appplications
Priorität beansprucht

			Priority Claimed	
97102527.5	Germany (EPO)	17. Februar 1997	☒	☐
(Number) (Nummer)	(Country) (Land)	(Day Month Year Filed) (Tag Monat Jahr eingereicht)	Yes Ja	No Nein
			☐	☐
(Number) (Nummer)	(Country) (Land)	(Day Month Year Filed) (Tag Monat Jahr eingereicht)	Yes Ja	No Nein
			☐	☐
(Number) (Nummer)	(Country) (Land)	(Day Month Year Filed) (Tag Monat Jahr eingereicht)	Yes Ja	No Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozeßordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35. United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1 56(a) which occured between the filing date of the prior application and the national or PCT international filing date of this application

(Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgegeben)	(Status) (patented, pending, abandoned)
(Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgeben)	(Status) (patented, pending, abandoned)

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POWER OF ATTORNEY. As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith *(list name and registration number)*

And I hereby appoint

Messrs. John D. Simpson (Registration No. 19,842) Lewis T. Steadman (17,074), William C. Stueber (16,453), P. Phillips Connor (19,259), Dennis A. Gross (24,410), Marvin Moody (16,549), Steven H. Noll (28,982), Brett A. Valiquet (27,841), Thomas I. Ross (29,275), Kevin W. Guynn (29,927), Edward A. Lehmann (22,312), James D. Hobart (24,149), Robert M. Barrett (30,142), James Van Santen (16,584), J. Arthur Gross (13,615), Richard J. Schwarz (13,472) and Melvin A. Robinson (31,870), David R. Metzger (32,919), John R. Garrett (27,888) all members of the firm of Hill, Steadman & Simpson, A Professional Corporation.

19 –

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Unterschrift des Erfinders Datum 11.2.98	Inventor's signature Date
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D-82131 Gauting Bundesrepublik Deutschland	
Voller Name des zweiten Miterfinders (falls zutreffend)	Full name of second joint inventor, if any:
Unterschrift des Erfinders Datum	Second Inventor's signature Date
Wohnsitz	Residence
Staatsangehorigkeit	Citizenship
Postanschrift	Post Office Address

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).